Topic: **Introduction to Gravity Surveying**
Audience: Afghanistan Geological Survey (AGS) Geophysics Team
Ministry of Mines & Industries (MMI) – Oil and Gas Exploration Office*
Participants: 10
Duration: 10 hours
Delivered: Two times: July 22-31 and September 2-3, 2006
Instructor: Charles Lindsay, Jared Abraham, and Benjamin Drenth (USGS)

Summary:

This course presented participants with a review of gravity methods and provided hands-on training with a modern gravimeter. The following concepts were presented:

1) gravitational attraction
2) units of gravity
3) the geoid as an equipotential gravitational surface
4) densities of geologic materials
5) absolute and relative gravity
6) applications in exploration geophysics
7) types of gravity meters
8) gravity survey principles
9) gravity data reduction

Training in gravity surveying was done using a state-of-the-art Scintrex CG-5 gravimeter. Meter care, placement, and the importance of careful leveling were emphasized. Participants completed a small survey loop that was tied to an arbitrary base and also reoccupied sites where gravity observations had been measured 30 years earlier including a relative gravity station at the Kabul International Airport.

Participants were introduced to processing gravity data. Tide, latitude, free-air, Bouguer, and terrain corrections were discussed and described using conceptual geological examples. Selected participants♦ visited Kandahar airfield, the base of operations for the U.S.G.S. airborne geophysical survey of Afghanistan. Participants toured the Navy Research Laboratory P-3 Orion aircraft that served as the airborne geophysical platform. They also received an introduction to the reduction of airborne gravity data using Oasis montaj.

Participants:

Mohammad Alam, Said Ashan♦, Faizulla, Sardar Hussain, Nassima Jan, Abdul Hakim Kohistany♦,Abdul Salam Muty*, Ghulam Rahman, Ghulam Sakhi♦, Mohammad Zia